



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant(s): Buijtenhuijs, et al.

Examiner: Cintins, I.

Serial No.: 09/820,546

Group: Art Unit: 1724

Filed: March 29, 2001

Docket: 570-13 CON

For: MATERIAL FOR EXTRACTING
HYDROPHOBIC COMPONENTS
DISSOLVED IN WATER

Dated: September 6, 2002

Commissioner for Patents
Washington, D.C. 20231

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Sir:

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Dated: September 6, 2002

Maria Goldman
Maria Goldman

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Respectfully submitted,



Paul J. Farrell

Reg. No. 33,494

Attorney for Applicant(s)

Dated: September 6, 2002

DILWORTH & BARRESE, LLP
333 Earle Ovington Blvd.
Uniondale, NY 11553
(516) 228-8484 (tel)
(516) 228-8516 (fax)

PJF/MRB:mg



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DILWORTH & BARRESE, LLP
333 Earle Ovington Blvd.
Uniondale, New York 11553
Tel.# (516) 228-8484
Fax # (516) 228-8516

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First Named Inventor	Buijtenhuijs
Examiner Name	Cintins, I.
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Attorney Docket No.	570-13 CON

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☐ Applicant claims small entity status. See 37 CFR 1.27

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FEE CALCULATION

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Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
101	740	201	370	Utility filing fee	
106	330	206	165	Design filing fee	
107	510	207	255	Plant filing fee	
108	740	208	370	Reissue filing fee	
114	160	214	80	Provisional filing fee	

SUBTOTAL (1) (\$ 0.00)

2. EXTRA CLAIM FEES

Total Claims	Extra Claims	Fee from below	Fee Paid
20**	0	\$18	\$0
3**	0	\$84	\$0
Multiple Dependent		\$280	\$0

**or number previously paid, if greater; For Reissues, see below

Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description
103	18	203	9	Claims in excess of 20
102	84	202	42	Independent claims in excess of 3
104	280	204	140	Multiple dependent claim, if not paid
109	84	209	42	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$ 0.00)

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for ex parte reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	400	216	200	Extension for reply within second month	
117	920	217	460	Extension for reply within third month	
118	1,440	218	720	Extension for reply within fourth month	
128	1,960	228	980	Extension for reply within fifth month	
119	320	219	160	Notice of Appeal	
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142	1,280	242	640	Utility issue fee (or reissue)	
143	460	243	230	Design issue fee	
144	620	244	310	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Processing fee under 37 CFR 1.17(q)	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
146	740	246	370	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	740	249	370	For each additional invention to be examined (37 CFR § 1.129(b))	
179	740	279	370	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	

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SUBMITTED BY

Name (Print/Type)

Paul J. Farrell

Signature

Registration No. (Attorney/Agent)

33,494

Complete (if applicable)

Telephone

(516) 228-8484

Date

September 6, 2002

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I hereby certify that this correspondence and the documents referred to as enclosed are being deposited with the United States Postal Service as first class mail, postpaid in an envelope, addressed to the: Commissioner for Patents, Washington, D.C. 20231 on September 6, 2002.

Dated: September 6, 2002

Maria Goldman

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TW
9-16-02

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APPELLANTS' BRIEF

Sir:

Pursuant to 37 C.F.R. 1.192, this brief is submitted in triplicate in connection with the appeal which has been taken herein.

(1) REAL PARTY IN INTEREST

The real party in interest is Akzo Nobel N.V.

(2) RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

(3) STATUS OF CLAIMS

Claims 1-13 are pending in the application. All of these claims have been finally rejected and constitute the claims on appeal. The appealed claims are set forth in the

Appendix.

(4) STATUS OF AMENDMENTS

In response to the final Office Action dated April 8, 2002 (the "Final Office Action"), Appellants submitted a response dated June 3, 2002 under 37 C.F.R. 1.116 which presented no amendment to the specification or claims. In an Advisory Action mailed July 8, 2002, the Examiner advised that the request for reconsideration had been considered, but did not place the application in condition for allowance based upon the references of record.

(5) SUMMARY OF INVENTION

The appealed claims are directed to a method for the extraction of hydrophobic constituents from an aqueous solution by contacting the solution with a porous, dimensionally stable granular or powdery material possessing pores of a defined size and containing a hydrophobic substance with affinity for the constituents to be extracted; and then regenerating the granular or powdery material and hydrophobic substance by removing the hydrophobic constituents (independent claim 1). The granular or powdery material has a particle size from 0.1 to 10 mm and is wetted more readily by the hydrophobic substance within its pores than by the aqueous solution to be treated. (Specification, page 4, lines 18-22.) The pores have a size of from about 0.1 to about 50 μm . (Specification, page 2, lines 1-7.)

The claimed method provides a significant increase in the extraction capacity of the material, with enhanced stability, making application on the industrial scale feasible

(specification page 2, lines 17-21).

(6) ISSUES

The issues presented in this appeal are whether Fickel et al. U.S. Patent No. 4,454,198 ("Fickel et al."), in view of U.S. Patent No. 4,276,179 ("Soehngen") and U.S. Patent No. 2,367,384 ("Tymstra et al.") establish the *prima facie* obviousness of the material for extracting hydrophobic solvents of appealed Claims 1-5 and 7-13; and whether Fickel et al. in view of Soehngen, Tymstra et al. and further in view of U.S. Patent No. 4,302,337 ("Larson et al.") establishes the *prima facie* obviousness of the material for extracting hydrophobic solvents of appealed Claim 6.

(7) GROUPING OF CLAIMS

Claims 1-4 and 6-13 stand or fall together. However, Claim 5 is further patentably distinct over the cited references.

(8) ARGUMENT

Claims 1-5 and 7-13 have been improperly rejected under 35 U.S.C. § 103(a) as being obvious over Fickel et al. U.S. Patent No. 4,454,198 ("Fickel et al.") in view of U.S. Patent No. 4,276,179 ("Soehngen") and U.S. Patent No. 2,367,384 ("Tymstra et al."). Claim 6 has been improperly rejected by the Examiner as being obvious over Fickel et al. in view of Soehngen and Tymstra et al., and further in view of U.S. Patent No. 4,302,337 ("Larson et al.").

I. THE REJECTION OF CLAIMS 1-13 FOR
OBVIOUSNESS IS IN ERROR

A. The Final Rejection and the References Relied Upon
as Evidence of Obviousness

In the Office Action mailed April 8, 2002 (the "Final Office Action"), the Examiner rejected Claims 1-5 and 7-13 as obvious over Fickel et al. in view of Soehngen and Tymstra et al. Claim 6 was rejected by the Examiner as being obvious over Fickel et al. in view of Soehngen and Tymstra et al., and further in view of Larson et al.

The Examiner applied the cited references in the Final Office Action as follows:

Claims 1-5 and 7-13 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Fickel et al. in view of Soehngen, further in view of Tymstra et al. As pointed out in the previous Office Action, Fickel et al. discloses the claimed invention with the exception of the presence of a hydrophobic substance immobilized in the pores of the powdery polypropylene, and the step of regenerating this resultant material. Soehngen teaches impregnating a polyolefinic adsorbent with a hydrophobic liquid or solid, in order to enhance the hydrocarbon contaminant adsorption capability of this polyolefinic adsorbent material; and it would have been obvious to one of ordinary skill in the art at the time the invention was made to immobilize a hydrophobic substance of the type disclosed by Soehngen into the pores of the powdery polypropylene of Fickel et al., in order to obtain the advantages disclosed by this secondary reference for the system of the primary reference. Such modification is deemed to be especially obvious in view of the disclosure by Fickel et al. (see col. 4, lines 42-51) that active substances may be incorporated into the disclosed material. Furthermore, Tymstra et al. discloses regenerating a solid oil adsorbent material with steam; and it would have been obvious to one of ordinary skill in the art at the time the invention was made to regenerate the oil removing material of the modified primary reference in this manner, in order to allow this modified primary reference material to be reused.

Claim 6 is again rejected under 35 U.S.C. 103(a) as being unpatentable over Fickel et al., Soehngen, and Tymstra et al. as applied above, and further in view of Larson et al. As pointed out in the previous Office Action, the modified primary reference discloses the claimed invention with the exception of the use of polystyrene as the immobilized hydrophobic substance. Larson et al. discloses removing hydrocarbon contaminants from an aqueous stream with a foraminous material such as polypropylene foam impregnated with polystyrene; and it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the polystyrene of Larson et al. for the immobilized hydrophobic substance of the modified primary reference, since this polystyrene is capable of enhancing the hydrocarbon removal capability of a polypropylene adsorbent material in substantially the same manner as the immobilized hydrophobic substance of the modified primary reference, to produce substantially the same results.

Appellants submitted a response dated June 3, 2002, in which they argued that the Examiner had failed to satisfy the burden, which rests on the Examiner, of making out a *prima facie* case of obviousness of the claimed subject matter as there was no teaching or suggestion to combine the references to arrive at Appellants' invention. In an Advisory Action mailed July 8, 2002, the Examiner advised that the request for reconsideration had been considered, but did not place the application in condition for allowance.

B. The References Fail to Establish the *Prima Facie* Obviousness of Claims 1-5 and 7-13

Before showing how the Examiner's rejection of the appealed claims fails to make out a *prima facie* case of obviousness, a statement of the legal principles relating to the establishment of *prima facie* obviousness would be worthwhile. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992) succinctly sets forth the principles

as follows:

The *prima facie* case is a procedural tool of patent examination, allocating the burdens of going forward as between examiner and applicant. *In re Spada*, 911 F.2d 705, 707 n.3, 15 USPQ2d 1655, 1657 n.3 (Fed. Cir. 1990). The term "*prima facie* case" refers only to the initial examination step. *In re Piasecki*, 745 F.2d 1468, 1572, 223 USPQ 785, 788 (Fed. Cir. 1984); *In re Rinehart*, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). As discussed in *In re Piasecki*, the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant.

After evidence or argument is submitted by the applicant in response, patentability is determined on the totality of the record, by a preponderance of evidence with due consideration to persuasiveness of argument. See *In re Spada*, *supra*; *In re Corkill*, 771 F.2d 1496, 1500, 226 USPQ 1005, 1008 (Fed. Cir. 1985); *In re Caveny*, 761 F.2d 671, 674, 226 USPQ 1, 3 (Fed. Cir. 1985); *In re Johnson*, 747 F.2d 1456, 1460, 223 USPQ 1260, 1263 (Fed. Cir. 1984).

If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent. See *In re Grabiak*, 769 F.2d 729, 733, 226 USPQ 870, 873 (Fed. Cir. 1985); *In re Rinehart*, *supra*.

Oetiker and the cited precedents are clear on this: if it can be shown that the Examiner has failed to make out a *prima facie* case of obviousness, the final rejection herein must be reversed.

It is also well established by the Federal Circuit that obviousness cannot be established by simply combining the teachings of the prior art to produce the claimed invention absent some teaching, suggestion or incentive supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984); *In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987).

The U.S. Patent and Trademark Office guidelines for *prima facie* obviousness are set forth in MPEP 2142 (Legal Concept of *Prima Facie* Obviousness) as follows:

...First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

These three criteria are not satisfied by the combination of Fickel et al., Soehngen, and Tymstra et al. with respect to the rejection of Claims 1-5 and 7-13. Nor are these criteria satisfied by the combination of Fickel et al., Soehngen, Tymstra et al. and Larson et al. in the rejection of Claim 6.

1. There is No Motivation to Modify or
Combine the References

Appellants claim, *inter alia*, a method for the extraction of hydrophobic constituents from an aqueous solution by contacting the solution with a porous, dimensionally stable granular or powdery material having particles of a defined size which, in turn, possess pores of a defined size. The pores contain a hydrophobic substance with affinity for the constituents to be extracted. Nowhere do the references teach or suggest this extraction process.

Fickel et al. disclose a method for removing hydrophobic substances from aqueous systems using porous polypropylene. The Fickel et al. material works in a manner analogous to a sponge. If the Fickel et al. material has open pore space, fluid will

move into those empty pores. However, if the pores are filled prior to use, no liquid can flow into the material. Thus, the particles of Fickel et al. remove the hydrophobic substance by *adsorbing* the substance into the particle pores; Fickel et al. does not disclose the *extraction* of hydrophobic constituents (fuel oil) from an aqueous solution since the fuel oil is not solubilized and is merely adsorbed into Fickel et al.'s empty porous polymers. (See Fickel et al. at column 4, lines 29-31.)

In contrast to the Fickel process, Appellants' extraction method is not limited to fuel oil and *requires* the presence of a hydrophobic substance in the pores of the porous, dimensionally stable granular or powdery material to accomplish the extraction process. Only by utilizing porous, dimensionally stable granular or powdery material having hydrophobic material-filled pores can the solubilized hydrophobic constituents be extracted from the aqueous solution. In fact, the Examiner admits that Fickel et al. does *not* disclose the presence of a hydrophobic substance in the pores of the Fickel polymer particles. (Final Office Action at p. 2.) Appellants' method also specifically provides for the regeneration of its porous, dimensionally stable granular or powdery material. Here, once again, the Examiner admits that Fickel et al. does *not* disclose the step of regenerating the porous, dimensionally stable granular or powdery material. (Final Office Action at p. 2.)

To remedy the deficiencies of Fickel et al., the Examiner first asserts that Soehngen teaches impregnating a polyolefinic adsorbent with a hydrophobic liquid or solid in order to enhance the hydrophobic contaminant adsorption capability of the adsorbent material, and thus it would have been obvious to one skilled in the art to immobilize the hydrophobic substance of Soehngen into the pores of Fickel et al.

However, there simply is no teaching or suggestion in either Fickel et al. or Soehngen to fill Fickel et al.'s polymers with Soehngen's liquid.

According to the Examiner, this modification (immobilizing the hydrophobic substance of Soehngen into the pores of Fickel et al.) "is deemed to be especially obvious in view of the disclosure by Fickel et al. . . . that active substances may be incorporated into the disclosed material." (Final Office Action pp. 2-3.) This argument ignores the fact that the active substances of Fickel et al. are not used for the extraction of hydrophobic constituents but instead are used for the long-term *release* of products, *e.g.*, those used in the fields of agriculture and forestry, from its pores. (See Fickel et al. at column 4, lines 49-68.) There is nothing to suggest to one skilled in the art that Fickel et al.'s pores could be filled with a substance that is intended to remain therein; in fact, this is contrary to the stated purpose of Fickel et al.'s invention, as to fill the pores with such a substance would interfere with the absorption of fuel oil into the empty pores. Moreover, neither Fickel et al. nor Soehngen provide any teaching or suggestion that their materials may be regenerated. Therefore, Soehngen does not remedy the deficiencies of Fickel et al.

The Examiner next asserts that Tymstra et al. discloses regenerating an oil adsorbent material with steam, so it would have been obvious to one skilled in the art to regenerate Fickel et al. as modified by Soehngen in order to reuse the modified Fickel et al. material.

Tymstra et al. discloses a method for removing small quantities of water-immiscible organic oily impurities from water (*see* page 1, left column, lines 1-4) using an inert solid coated with a cationic surface bonding agent to attract the oily impurities.

Once the solid has absorbed the oil and been removed from the water "[t]he oil may be removed from the spent solid by steam vaporization, burning, solvent washing ... or by the chemical action of an aqueous solution of an alkali metal hydroxide followed by neutralization with an aqueous acid." (Page 3, left column, lines 19-25.) However, Tymstra et al.'s regeneration process removes the cation bonding agent, which must be reapplied to the substrate before the solid may be reused. "As most regeneration treatments also remove the bonding agent from the solid together with the absorbed oil the regenerated solid must usually be recoated. . . ." (See Tymstra et al. at page 3, left column, lines 43-47.) This is contrary to Appellants' regeneration step, which does not result in the separation of the hydrophobic substance from the granular or powdery material: only the hydrophobic constituents to be extracted are removed, so there is no need to reapply or reintroduce the hydrophobic substances into Appellants' granular or powdery material after regeneration. (See Specification, Examples II, III, IV, V.) Accordingly, Tymstra et al. does not remedy the deficiencies of Fickel et al.

Most, if not all, inventions arise from a combination of old elements. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457 (Fed. Cir. 1998). Thus, every element of a claimed invention may often be found in the prior art. *Id.* However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. *Id.* Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant. *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir.

1984).

For the references to suggest the claimed invention, one skilled in the art would necessarily have to be motivated to add hydrophobic materials to the pores of Fickel et al's polypropylene in order to extract hydrophobic constituents from aqueous solutions, and then regenerate the material for re-use. There must be adequate support in the prior art to modify Fickel et al. or combine Fickel et al. with Soehngen and Tymstra et al. to arrive at the claimed invention in order to complete the U.S. Patent and Trademark Office's *prima facie* case and shift the burden of going forward to Appellants. *In re Grabiak*, 769 F.2d 729, 226 USPQ 870 (Fed. Cir. 1985). The Examiner has not carried his burden of particularly showing how the prior art provides this motivation and, as noted above, the references do not provide any suggestion or motivation to modify or combine the teachings of the references.

2. There is No Reasonable Expectation of Success

There is no reasonable expectation of success because Fickel et al., unlike Appellants, is not concerned with the extraction of hydrophobic materials from aqueous solutions. Fickel et al. is limited to the adsorption of materials, primarily fuel oil, into the pores of its polypropylene. Neither Soehngen nor Tymstra et al. provide any suggestion to combine their teachings with that of Fickel et al. This is especially so with respect to Tymstra et al. in view of the fact that the skilled person confronted with Tymstra et al. would not be able to make the connection with Fickel et al. since Fickel et al. is not using the cationic surface active bonding agent which is the essence of Tymstra et al.: the coating of Tymstra et al. in no way suggests filling Fickel et al.'s pores with a

hydrophobic substance. Similarly, the skilled person would not make a connection between Tymstra et al. and Soehngen because the definition for Soehngen's liquid and Tymstra et al.'s cationic surface active bonding agents are mutually exclusive (note that the waxes and fatty acids of Soehngen are defined in Tymstra et al. to be anionic and hence cannot be classified as cationic surface active bonding agents). Accordingly, one skilled in the art following the teachings of the references would not think there was a reasonable expectation of success in the combination of references.

3. The References Do Not Teach or
 Suggest All of the Claim Limitations

For a *prima facie* case of obviousness, the Examiner must show how the references teach or suggest all of the limitations of the claims. Appellants' claims call for the *extraction* of hydrophobic materials from aqueous solutions by contacting the solution with a porous, dimensionally stable granular or powdery material; the pores contain a hydrophobic substance with affinity for the constituents to be extracted; and the material may be regenerated for further use. None of the cited references disclose all of these elements nor suggest modifying or combining references to arrive at the claimed invention.

A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and then-accepted wisdom in the field. See, *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Close adherence to this methodology is especially important in cases where the very ease

with which the invention can be understood may prompt one "to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher." *Id.* (quoting *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 313 (Fed. Cir. 1983)).

The Examiner has engaged in such hindsight reconstruction with respect to Soehngen, noting that "upon modification of Fickel et al. by the teachings of Soehngen, in the manner proposed above, the resultant material will remove hydrocarbon constituents by a combination of adsorption and extraction for the same reason that Appellants' material exhibits such a function." (Final Office Action p. 4). However, one skilled in the art reading Fickel, et al. would divine no suggestion to include hydrophobic substances within its pores to *extract* hydrophobic constituents of the aqueous solution. The Examiner has taken Appellants' teachings to declare that the claims are obvious.

The Examiner has also engaged in such hindsight reconstruction with respect to Tymstra et al., noting that "the steam treatment of Tymstra et al. will not remove the hydrophobic substance (e.g. soybean oil and/or castor oil) from the powdery material (i.e. polypropylene) of Fickel et al. for substantially the same reason that Applicant's steam treatment does not produce such a result." (Final Office Action p. 5.) To arrive at this conclusion, the Examiner has again taken Appellants' teachings, not those of the prior art, to declare that Appellants' claims are obvious. One skilled in the art reading Tymstra et al. would, in fact, conclude that a steam treatment for regeneration would remove the hydrophobic substance.

A rejection cannot be predicated on the mere identification of individual components of claimed limitations. Rather, *particular* findings must be made as to the

reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). This the Examiner has not done. It is well settled that claims must be read *as a whole*. The Examiner is examining the claims in a piecemeal fashion, but this is not consistent with the standard expressed in MPEP 2142 and in Federal Circuit precedent. All of the limitations of the claims must be taught or suggested. The cited references do not accomplish this.

Thus, Fickel et al., Soehngen and Tymstra et al. taken alone or in any combination fail to make obvious Claims 1-5 and 7-13.

4. Claim 5 is Further Distinct over the References

Claim 5, which depends from Claim 1, further requires that the immobilized hydrophobic substance within the pores of the granular or powdery material is a polymer which swells in the hydrophobic constituents to be extracted. There is simply no teaching or suggestion in Fickel et al. that its porous polypropylene can be filled with a swellable polymer for the extraction of materials; there is no teaching or suggestion in Soehngen that its hydrophobic liquid or solid can be a swellable polymer; and the cationic bonding agent of Tymstra et al. clearly is not a swellable polymer. Accordingly, Claim 5 is further distinct over Fickel et al., Soehngen and Tymstra et al., whether taken alone or in any combination.

C. The References Fail to Establish the *Prima Facie*
 Obviousness of Claim 6

Claim 6 has been rejected by the Examiner in the Final Office Action as being obvious over Fickel et al. in view of Soehngen and Tymstra et al. for the reasons recited with respect to Claims 1-5 and 7-13, and further in view of Larson et al. According to the Examiner, Larson et al. discloses removing hydrocarbon contaminants from an aqueous stream with a foraminous material such as polypropylene foam impregnated with polystyrene. However, there is nothing in Larson et al. that teaches or suggests that its foraminous material with polystyrene may be regenerated. Moreover, Claim 6 depends from Claim 1 and contains all its limitations. Therefore, for all of the reasons noted above with respect to the rejection of Claims 1-5 and 7-13, it is respectfully submitted that the references fail to make obvious Claim 6.

II. CONCLUSION

In conclusion, Appellants respectfully submit that the leap from the references to the instantly claimed invention is non-obvious and that the references fail to motivate one of ordinary skill in the art to make this leap.

For the foregoing reasons and for all of the reasons of record, it is submitted that Claims 1-13 are patentable over the prior art relied upon by the Examiner. Reversal of the final rejections by the Board is therefore believed to be warranted, such being respectfully requested.

Respectfully submitted,



Paul J. Farrell
Registration No. 33,494
Attorney for Applicant(s)

DILWORTH & BARRESE, LLP
333 Earle Ovington Blvd.
Uniondale, NY 11553
Phone: (516) 228-8484
Fax: (516) 228-8516

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(9) APPENDIX

Claims 1-13 on Appeal

1. (Amended) A method for the extraction of hydrophobic constituents from an aqueous solution, involving the steps of:

a. contacting said solution with a porous, dimensionally stable granular or powdery material, of which the pores have a size of from 0.1 to 50 μm and contain a hydrophobic substance with affinity for the hydrophobic constituents to be extracted, which granular or powdery material has a particle size of from 0.1 to 10 mm, and is wetted more readily by the hydrophobic substance immobilized in the pores than by the aqueous solution to be treated, and

b. regenerating the product of step a), essentially without the granular or powdery material being freed from the hydrophobic substance, by removal of the hydrophobic constituents.

2. (Amended) A method according to claim 1, wherein steam is used in step b) to remove the hydrophobic constituents.

3. A method according to claim 1, wherein steps a) and b) are repeated.

4. (Amended) A method according to claim 1, wherein the pore size of the porous, dimensionally stable granular or powdery material is from 0.2 to 15 μm .

5. A method according to claim 1, wherein the immobilized hydrophobic substance is a polymer which swells in the hydrophobic constituents to be extracted.

6. A method according to claim 1, wherein the immobilized substance is polystyrene.

7. A method according to claim 1, wherein the immobilized substance is a liquid.
8. A method according to claim 1, wherein the immobilized substance is a glycerol ester of one or more optionally unsaturated fatty acids.
9. A method according to claim 1, wherein the immobilized glycerol ester is soybean oil and/or castor oil.
10. A method according to claim 1, wherein the porous material is a polyolefin.
11. A method according to claim 1, wherein the porous material is polypropylene.
12. (Amended) A method according to claim 1, wherein the porous material was obtained by dissolving a polymer in a solvent with heating, cooling the solution, and mechanically reducing the solidified mass.
13. A method according to claim 1, wherein the polymer is polypropylene and the solvent is soybean oil and/or castor oil.